Amendments to the Specification:

Please replace the paragraphs at page 2, line 24-page 3, line 28, with the following new paragraphs:

An aspect of the invention provides a Doppler ultrasound system having an ultrasound transducer, an ultrasound receiver, an analog-to-digital converter (ADC), and a processor. The ultrasound transducer is operable to emit ultrasound signals into the subject along an ultrasound beam axis and the ultrasound receiver is for detecting echo signals resulting from the ultrasound signals emitted into the subject. The analog-to-digital converter (ADC) circuit is coupled to the ultrasound receiver and is configured to quantize the echo signals received by the ultrasound receiver into digital sample values. The processor is coupled to the ADC circuit for processing the digital sample values to calculate blood flow data as a function of time for a plurality of locations along the ultrasound beam axis. The blood flow data is representative of blood flow detected along the ultrasound beam axis as a function of time.

Another aspect of the invention provides a data processing engine for a Doppler ultrasound system having an ultrasound transducer from which ultrasound signals are emitted into the subject along an ultrasound beam axis and an ultrasound receiver detecting echo signals resulting from the ultrasound signals emitted into the subject. The data processing engine includes an analog-to-digital converter (ADC) circuit coupled to the ultrasound receiver to quantize the echo signals received by the ultrasound receiver into digital sample values, which are stored as sample vectors. A processor coupled to the ADC circuit processes the digital sample vectors to calculate blood flow data as a function of time for a plurality of locations along the ultrasound beam axis. The processor is further operable to process the sample vectors to calculate detected Doppler signal power data as a function of time and relate the Doppler signal power data to the blood flow data for the plurality of locations along the ultrasound beam axis.

Another aspect of the invention provides a method for generating blood flow information of a subject for a Doppler ultrasound system emitting pulsed ultrasound signals along an ultrasound beam axis and detecting echo signals resulting therefrom. For each pulse of ultrasound, the detected echo signals are quantized to generate a plurality of digital sample values representative of the echo signals. The digital sample values of the detected echo signals

are processed to calculate data representative of blood flow velocity detected along the ultrasound beam axis as a function of time.

Another aspect of the invention provides a method for providing blood flow information of a subject for a Doppler ultrasound system emitting ultrasound signals along an ultrasound beam axis and detecting echo signals resulting therefrom. The method includes quantizing the detected echo signals to generate a plurality of digital sample values representative of the echo signals and generating quadrature vectors from the plurality of digital sample values. The quadrature vectors are processed to calculate blood flow data as a function of time for a plurality of locations along the ultrasound beam axis and to calculate detected Doppler signal power data as a function of. Data is generated from the blood flow data and the detected Doppler signal power data that is representative of blood flow detected along the ultrasound beam axis as a function of time. The data representing the Doppler signal power is associated to the blood flow data for each of the locations along the ultrasound beam axis.